PATENTS
112025-0074C1
Seq. #4089 CPOL# 157839

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re The Application of:
Raymond Kloth

Serial No.: 09/755,512

Examiner: Nguyen, Toan D.

Filed: January 5, 2001

Art Unit: 2616

For: Derived VLAN Mapping Technique

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January 14, 2008

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Sir:

APPEAL BRIEF

In response to the Notice of Appeal filed Nov. 12, 2007 the Final Office Action dated June 12, 2007 and the Advisory Action dated Sept. 17, 2007, the Applicant hereby submits this Appeal Brief.

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I. REAL PARTY IN INTEREST

The real party in interest is Cisco Technology, Inc. by an Assignment recorded at reel 009033, frame 0894.

II. RELATED APPEALS AND INTERFERENCES

The Applicants and the Applicants' legal representatives know of no related appeals or interferences that will directly affect, be directly affected by, or have a bearing on the Board's decision in the present appeal.

III. STATUS OF CLAIMS

The status of the claims is:

A. Total Number of Claims Pending in Application

Claims 1, 4, 8-11, 13-16, 18-20, 24-42 stand pending in the Application.

B. Status of All the Claims

Claims 2-3, 5-7, 12, 17, and 21-23 stand cancelled.

Claims 1, 4, 8-11, 13-16, 18-20, 24-42 stand rejected.

No claims are withdrawn from consideration on appeal.

No claims are objected to.

No claims stand allowed.

C. Claims on Appeal

Claims 1, 4, 8-11, 13-16, 18-20, and 24-42 are currently being appealed.

IV. STATUS OF AMENDMENTS

An Amendment After Final Under 37 C.F.R. §1.116 was filed on Aug. 13, 2007, subsequent to the Final Office Action dated June 12, 2007. While the Applicant believes the Amendment After Final was entered, there is some uncertainty. Line 7 of the Advisory Action, which normally indicates entry status, was left blank. Neither the box indicating that the Amendment "will be entered," nor the box indicating that the Amendment "will not be entered" was checked by the Examiner. While this leads to some uncertainty, the Applicant respectfully notes that the Amendment After Final did not add, amend, or cancel any claims. Thus, even if the Applicant's belief that the Amendment After Final was entered is incorrect, the status of the claims should be the same as indicated herein.

V. SUMMARY OF CLAIMED SUBJECT MATTER

This summary describes exemplary embodiments of the invention.

Independent claim 1 is directed to a method of operating a switch for frames in a computer network. See Application page 8, lines 16-19. A frame (received frame) is received at a port of the switch. See page 12, lines 5-10, page 18, lines 25-26 and Fig. 6, 612. The received frame contains one or more indicia of frame type; the one or more indicia of frame type includes an indicia of a protocol type. See page 13, line 26 to page 14, line 2, page 19, lines 1-3, Fig. 2 and Fig. 7, 706. A virtual local area network (VLAN) value associated with the port is accessed. See page 13, lines 4-5 and page 18, lines 26-27. A virtual local area network (derived VLAN) value is derived in response to the one or more indicia of frame type and the VLAN value, the derived VLAN value for use internal to the switch. See page 9, lines 8-13 and page 14, lines 2-23 and page 19, lines 4-12. A forwarding database is accessed with the derived VLAN value to determine a destination address. See page 14, lines 20-23, page 19, line 25 to page 20 lines 1, and Fig. 7, 728, 730. In response to the derived VLAN value, the received frame is forwarded to an output port for transmission to the destination address. See page 20, lines 1-3.

Independent claim 9 is directed to an apparatus to forward frames in a computer network. See Application page 8, lines 16-19. A port is configured to receive a frame (received frame). See page 12, lines 5-10, page 18, lines 25-26 and Fig. 6, 612. The port is associated with a virtual local area network (VLAN) value. See page 13, lines 4-5 and page 18, lines 26-27. The received frame contains one or more indicia of frame type; the one or more indicia of frame type including an indicia of a protocol type. See page 13, line 26 to page 14, line 2, page 19, lines 1-3, Fig. 2 and Fig. 7, 706. A parsing engine is configured to derive a virtual local area network (derived VLAN) value in response to the one or more indicia of frame type and the VLAN value, the derived VLAN value for use internal to the switch. See page 9, lines 8-13 and page 14, lines 2-23, page 19, lines 4-12 and Fig. 6, 608. A forwarding database is configured to use the derived VLAN value as

an input and to yield a destination address as an output. See page 14, lines 20-23, page 19, line 25 to page 20 lines 1, and Fig. 7, 728, 730. An output port is configured to transmit the received frame, in response to the derived VLAN value, to the destination address. See page 20, lines 1-3.

Independent claim 11 is directed to a computer readable media containing instructions for the practice of operating a switch for frames in a computer network. See Application page 11, line 24 to page 12, line 2 and page 8, lines 16-19. A frame (received frame) is received at a port of the switch. See page 12, lines 5-10, page 18, lines 25-26, and Fig. 6, 612. The received frame contains one or more indicia of frame type; the one or more indicia of frame type including an indicia of a protocol type. See page 13, line 26 to page 14, line 2, page 19, lines 1-3, Fig. 2 and Fig. 7, 706. A virtual local area network (VLAN) value associated with the port is accessed. See page 13, lines 4-5 and page 18, lines 26-27. A virtual local area network (derived VLAN) value is derived in response to the one or more indicia of frame type and the VLAN value, the derived VLAN value for use internal to the switch. See page 9, lines 8-13 and page 14, lines 2-23 and page 19, lines 4-12. A forwarding database is accessed with the derived VLAN value to determine a destination address. See page 14, lines 20-23, page 19, line 25 to page 20 lines 1, and Fig. 7, 728, 730. In response to the derived VLAN value, the received frame is forwarded to an output port for transmission to the destination address. See page 20, lines 1-3.

Independent claim 13 is directed to a method of operating a switch for frames in a computer network. See Application page 8, lines 16-19. One or more indicia of frame type found in a received frame are used to derive a virtual local area network (derived VLAN) value. See page 9, lines 8-13 and page 14, lines 2-23 and page 19, lines 4-12. The derived VLAN value used internal to the switch; the derived VLAN value being different from a VLAN value associated the frame external to the switch. See page 14, lines 20-23, page 15, lines 7-15 and page 16, line 26 to page 17, line 9. The derived VLAN

value is used in making forwarding decisions. See page 14, lines 20-23, page 19, line 25 to page 20 lines 1, and Fig. 7, 728, 730.

Independent claim 16 is directed to a computer readable media containing instructions for the practice of operating a switch for frames in a computer network. See Application page 11, line 24 to page 12, line 2 and page 8, lines 16-19. One or more indicia of frame type found in the received frame are used to derive a virtual local area network (derived VLAN) value. See page 9, lines 8-13 and page 14, lines 2-23 and page 19, lines 4-12. The derived VLAN value used internal to the switch; the derived VLAN value being different from a VLAN value associated the frame external to the switch. See page 14, lines 20-23, page 15, lines 7-15, and page 16, line 26 to page 17, line 9. The derived VLAN value is used in making forwarding decisions. See page 14, lines 20-23, page 19, line 25 to page 20 lines 1, and Fig. 7, 728, 730.

Independent claim 18 is directed to a method of operating a switch for frames in a computer network. See Application page 8, lines 16-19. A frame (received frame) is received at a port of the switch. See page 12, lines 5-10, page 18, lines 25-26 and Fig. 6, 612. The received frame contains one or more indicia of frame type; the one or more indicia of frame type includes an indicia of a protocol type. See page 13, line 26 to page 14, line 2 and page 19, lines 1-3, Fig. 2 and Fig. 7, 706. A port index value associated with the port is accessed. See page 9, lines 21-24 and page 12, line 23 to page 13, line 3. A virtual local area network (derived VLAN) value is derived in response to the one or more indicia of frame type and the port index value. See page 21, lines 1-11. A forwarding data base is accessed with the derived VLAN value to determine a destination address. See page 14, lines 20-23, page 19, line 25 to page 20 lines 1, and Fig. 7, 728, 730. In response to the derived VLAN value, the received frame is forwarded to an output port for transmission to the destination address. See page 20, lines 1-3.

Independent claim 19 is directed to an apparatus to forward frames in a computer network. See Application page 8, lines 16-19. A port is configured to receive a frame (received frame). See page 12, lines 5-10, page 18, lines 25-26 and Fig. 6, 612. The port

is associated the port associated with a index value. See page 9, lines 21-24 and page 12, line 23 to page 13, lines 3. The received frame contains one or more indicia of frame type; the one or more indicia of frame type includes an indicia of a protocol type. See page 13, line 26 to page 14, line 2, page 19, lines 1-3, Fig. 2 and Fig. 7, 706. A parsing engine is configured to derive a virtual local area network (derived VLAN) value in response to the one or more indicia of frame type and the index value. See page 21, lines 6-11 and Fig. 6, 608. A forwarding database is configured to use the derived VLAN value as input and to yield a destination address as output. See page 14, lines 20-23, page 19, line 25 to page 20 lines 1, and Fig. 7, 728, 730. An output port is configured to transmit the received frame, in response to the derived VLAN value, to the destination address. See page 20, lines 1-3.

Independent claim 20 is directed to an apparatus to forward frames in a computer network. See Application page 8, lines 16-19. Means for receiving receive a frame (received frame). See page 12, lines 5-10 and page 18, lines 25-26 and Fig. 6, 612. The received frame contains one or more indicia of frame type; the one or more indicia of frame type includes an indicia of a protocol type. See page 13, line 26 to page 14, line 2, page 19, lines 1-3, Fig. 2, and Fig. 7, 706. Means for accessing access an index value associated with the means for receiving a frame. See page 9, lines 21-24, page 12, line 23 to page 13, line 3 and Fig. 6, 608. Means for deriving derive a virtual local area network (derived VLAN) value in response to the one or more indicia of frame type and the index value. See page 21, lines 1-11 and Fig. 6 630, 636. Means for accessing access a forwarding database with the derived VLAN value to determine a destination address. See page 14, lines 20-23, page 19, line 25 to page 20 lines 1, Fig. 6, 630, 632 and Fig. 7, 728, 730. Means for forwarding forward, in response to the derived VLAN value, the received frame to an output port for transmission to the destination. See page 20, lines 1-3, page 17, lines 20-24 and Fig. 6, 612, 614.

Independent claim 32 is directed to a method. A frame is received at an input port. See Application page 12, lines 5-10, page 18, lines 25-26 and Fig. 6, 612. The frame includes a protocol type. See page 13, line 26 to page 14, line 2 and page 19, lines 1-3, Fig. 2 and Fig. 7, 706. A virtual local area network (VLAN) value associated with the input port is accessed. See page 13, lines 4-5 and page 18, lines 26-27. The frame is associated with a protocol code based on the frame's protocol type. See page 14, lines 2-5 and page 19, 4-6. The protocol code is concatenated together with the VLAN value to produce a mapping address. See page 14, lines 5-10 and page 19, lines 8-10. The mapping address is applied to a memory structure to obtain a derived VLAN value that is based upon both the frame's protocol type and the VLAN value associated with the input port, the derived VLAN value to differ from at least one other derived VLAN value for another frame received on the input port, but having a different protocol type. See page 14, lines 11-23, page 19, lines 11-12 and page 15, lines 7-15. A forwarding database is accessed with the derived VLAN value to determine a destination address. See page 14, lines 20-23, page 19, line 25 to page 20 lines 1, and Fig. 7, 728, 730. The frame is forwarded to an output port for transmission to the destination address. See page 20, lines 1-3.

Independent claim 36 is directed to an apparatus. An input port is configured to receive a frame. See Application page 12, lines 5-10, page 18, lines 25-26 and Fig. 6, 612. The frame includes a protocol type. See page 13, line 26 to page 14, line 2 and page 19, lines 1-3, Fig. 2 and Fig. 7, 706. The input port is associated with a virtual local area network (VLAN) value. See page 13, lines 4-5 and page 18, lines 26-27. A protocol mapping table is configured to map the frame's protocol type to a protocol code. See page 14, lines 2-5 and page 19, lines 4-6. An engine is configured to concatenate the protocol code together with the VLAN value to produce a mapping address. See page 14, lines 5-10 and page 19, lines 8-10. The engine is further configured to apply the mapping address to a memory structure to obtain a derived VLAN value that is based upon both

the frame's protocol type and VLAN value associated with the input port, the derived VLAN value to differ from at least one other derived VLAN value for another frame received on the input port, but having a different protocol type. See page 14, lines 11-23, page 19, lines 11-12 and page 15, lines 7-15. A forwarding database is configured to use the derived VLAN value to determine a destination address. See page 14, lines 20-23, page 19, line 25 to page 20 lines 1, and Fig. 7, 728, 730. An output port is configured to transmit the frame to the destination address. See page 20, lines 1-3.

Independent claim 39 is directed to a method. A frame is received at an input port. See Application page 12, lines 5-10, page 18, lines 25-26 and Fig. 6, 612. The frame includes a protocol type and a source address. See page 5, lines 1-4, page 13, line 26 to page 14, line 2 and page 19, lines 1-3, Fig. 2 and Fig. 7, 706. In response to the protocol type indicating a particular protocol type, the source address is parsed to obtain a subnet value. See page 19, lines 13-17 and Fig. 7, 710. The subnet value is applied to a memory structure to map the subnet value to a derived VLAN value, the derived VLAN value to differ from at least one other derived VLAN value for another frame received on the input port, but having a different subnet value. See page 19, lines 17-21. A forwarding database is accessed with the derived VLAN value to determine a destination address. See page 14, lines 20-23, page 19, line 25 to page 20 lines 1, and Fig. 7, 728, 730. The frame forwarded to an output port for transmission to the destination address. See page 20, lines 1-3.

Independent claim 41 is directed to an apparatus. An input port is configured to receive a frame. See Application page 12, lines 5-10, page 18, lines 25-26 and Fig. 6, 612. The frame includes a protocol type and a source address. See page 5, lines 1-4, page 13, line 26 to page 14, line 2 and page 19, lines 1-3, Fig. 2 and Fig. 7, 706. An engine is configured to, in response to the protocol type indicating a particular protocol type, parse the source address to obtain a subnet value. See page 19, lines 13-17 and Fig.

7, 710. The engine is further configured to apply the subnet value to a memory structure to map the subnet value to a derived VLAN value, the derived VLAN value to differ from at least one other derived VLAN value for another frame received on the input port, but having a different subnet value. See page 19, lines 17-21. A forwarding database is configured to use the derived VLAN value to determine a destination address. See page 14, lines 20-23, page 19, line 25 to page 20 lines 1, and Fig. 7, 728, 730. An output port is configured to transmit the frame to the destination address. See page 20, lines 1-3.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Whether claims 1, 9-11, 13-16, 18-20, 24, 26, 28, 30, 32-34, and 36-37 are unpatentable under 35 U.S.C. §102(e) over U. S. Patent No. 6,269,098 to Crayford (hereinafter "Crayford"), where the reference fails to disclose several elements of the claims.

B. Whether claims 4, 8, 25, 27, 29, 31, 35, and 38-42 are unpatentable under 35 U.S.C. §103(a) over Crayford in view of U. S. Patent No. 6,023,563 to Shani (hereinafter "Shani"), where both references fails to teach or suggest several elements of the claims.

VII. ARGUMENT

A. Grouping of Claims

For each ground of rejection that the Applicant contests herein that applies to more than one claim, such additional claims, to the extent separately identified and argued below, do not stand or fall together.

B. Legal Standards

In rejecting claims under 35 U.S.C. §102, the Examiner bears the initial burden of presenting a prima facie case of anticipation. To establish a prima facie case of anticipation, the Examiner must show a single prior art reference discloses each and every element of a claimed invention. See, e.g., RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d 1440, 1444 (Fed. Cir. 1984). There can be no differences between the claimed invention and the cited references, as viewed by a person of ordinary skill in the art. Scripps Clinic & Research Foundation v. Genetech Inc., 927 Fed 1565, 1576 (Fed. Cir. 1991). If a single claim limitation is missing from the prior art reference, then the rejection is improper and should be reversed.

In rejecting claims under 35 U.S.C. §103, the Examiner bears the initial burden of presenting a prima facie case of obviousness. See, e.g., In re Rijckaert, 9 F.3d 1531, 1532 (Fed. Cir. 1993). To establish a prima facie case of obviousness, the Examiner must show the references, when combined, teach or suggest all of the claimed limitations. *See* Application of Royka, 490 F.2d 981, 984, (C.C.P.A. 1974); Application of Wilson, 424 F.2d 1382, 1385 (C.C.P.A. 1970). In coming to this determination, the Examiner should (a) determine the scope and content of the prior art, (b) ascertain the differences between the prior art and the claims at issue, (c) resolving the level of ordinary skill in the pertinent art, and (d) evaluate evidence of secondary considerations. KSR Intern. Co. v. Teleflex Inc., 127 S. Ct. 1727, 1729 (2007) (citing Graham v. John Deere Co. of Kansas City, 383 U.S. 1, 17-18 (1966)). If the rejection can only be made by resort to specula-

tion, unfounded assumption, or hindsight reconstruction, then the rejection is improper and should be reversed. In re Warner, 379 F.2d 1011, 1017 (CCPA 1967).

C. Rejection under 35 U.S.C. §102(e) over Crayford

1. Claims 1, 9-11, 13-16, 24, 26, 32-34 and 36-37

Independent claim 32, representative of claims, 1, 9-11, 13-16, 24, 26, 32-34 and 36-37 recites (with emphasis added):

> 32. A method comprising:
> receiving a frame at a input port, the frame including a protocol type;
> accessing a virtual local area network (VLAN) value associated with the input port;
> ***associating the frame with a protocol code based on the frame's protocol type***;
> ***concatenating the protocol code together with the VLAN value to produce a mapping address;***
> ***applying the mapping address to a memory structure to obtain a derived VLAN value that is based upon both the frame's protocol type and VLAN value associated with the input port,*** the derived VLAN value to differ form at least one other derived VLAN value for another frame received on the input port, but having a different protocol type;
> accessing a forwarding database with the derived VLAN value to determine a destination address; and
> forwarding the frame to an output port for transmission to the destination address.

Crayford describes a network switch for switching frames among multiple ports, in which the number of VLANs supported may be scaled. See Crayford col. 2, lines 10-13. The switch supports "tagged frames" that have a VLAN tag that consists of a 2-byte (16-bit) VLAN ID field (see Fig. 7B, frame 142, "VLAN ID" field) and a 2-byte (16-bit) VLAN Type field (*see* Fig. 7B, frame 142, "VLAN Type" field). See Col. 8, lines 32-35. The tagged frames also include an "Orig Type/Length" field. See Fig. 7B, frame 142, "Orig Type/Length" field.

When a tagged frame is received, the 2-byte VLAN ID value is extracted from the VLAN tag and mapped to a corresponding 5-bit VLAN index value, which is then used in forwarding the frame. See col. 8, lines 38-40, col. 9, lines 60-62, Fig. 19, and col. 18, line 66 to col. 19, line 4. Neither Crayford's 2-byte VLAN Type, nor Crayford's "Orig Type/Length" field are used in the mapping to a 5-bit VLAN index value. Instead, they are used for entirely different purposes. For example, Crayford's VLAN type is checked against a register to verify that the frame is truly a tagged frame. See col. 9, lines 43-52.

Crayford's switch also supports "untagged frames," which do not include VLAN tags. These frames include a "Type/Length" field. *See* Fig. 7A, frame 140, "Type/Length" field and col. 8, lines 30-32. For untagged frames, Source Address (SA), receive (RX) port number, and Destination Address (DA) are mapped to a 5-bit VLAN index value, which is then used in forwarding the frame. See col. 8, lines 52-62 see col. 10, lines 14-18. There is no suggestion in Crayford that the "Type/Length" field is used the mapping to a 5-bit VLAN index value.

Crayford fails to disclose all the limitations of representative claim 32. Specifically, Crayford does not disclose "*associating the frame with a protocol code based on the frame's protocol type*" and "*concatenating the protocol code together with the VLAN value to produce a mapping address"* and "*applying the mapping address to a memory structure to obtain a derived VLAN value that is based upon both the frame's protocol type and VLAN value associated with the input port.*"

The Applicant novelly concatenates a protocol code based on a frame's protocol type with a VLAN value of the frame to produce a mapping address. This mapping address, rather than just the VLAN value, is used to derive a derived VLAN value. The derived VLAN value is then used with the forwarding database. By using a derived VLAN value created in this manner, a single forwarding database may effectively simulate multiple

forwarding databases, i.e. the forwarding database can forward frames differently depending on their particular protocol type, mimicking the operation of a plurality of protocol specific forwarding databases.

In the Advisory Action of Sept. 17, 2007 and in the Final Office Action of June 12, 2007, the Examiner likens the Applicant's claimed "protocol type" to Crayford's 2-byte (16-bit) VLAN type field (*see* Crayford Fig. 7B, frame 142, VLAN Type field). Even assuming, for purposes of argument, that these are analogous, Crayford does no suggest what the Applicant claims. Crayford does not map protocol type to a protocol code, and then concatenate this to a VLAN ID. Indeed, Crayford explicitly discusses separating his 2-byte (16-bit) VLAN type with his 2-byte (16-bit) VLAN ID value, and using them for different purposes. For example, at col. 9, lines 39-43 Crayford state "[i]f a frame contains a VLAN tag, the receive MAC 62 **strips** the VLAN identifier in the tag and writes the VLAN identifier to the buffer header of the first buffer in external memory 34… (emphasis added). Only Crayford's VLAN identifier (ID) is mapped to a corresponding 5-bit VLAN index value. *See* col. 8, lines 38-40, col. 9, lines 60-62, Fig. 19, and col. 18, line 66 to col. 19 line 4. Crayford's 2-byte VLAN type is in no way used in the mapping. Thus, Crayford does not teach what the Applicant has claimed.

Further, previous Office Actions have also made certain references to Crayford's Type/Length fields. See Crayford 7A, frame 140, "Type/Length" field and Fig. 7B, frame 142, "Orig Type/Length" field. However, these aspects of Crayford also do not teach what the Applicant has claimed. In none of Crayford's embodiment's is there any suggestion that the a Type/Length field is somehow combined with a VLAN value to produce a mapping address. Accordingly, the mere presences of such fields in a Crayford's packets do not teach what the Applicant has claimed.

Accordingly, regardless of what aspects of Crayford are looked to, Crayford does not discloses the elements that are claimed, and the rejection should be reversed.

2. Claims 18-20, 28, and 30

Independent claim 18, representative of claims 18-20, 28, and 30 recites (with emphasis added):

> 18. A method of operating a switch for frames in a computer network, comprising:
> receiving a frame (received frame) at a port of said switch, said received frame containing one or more indicia of frame type, said one or more indicia of frame type including an indicia of a protocol type;
> accessing a port index value associated with the port;
> ***deriving a virtual local area network (derived VLAN) value in response to said one or more indicia of frame type and said port index value***;
> accessing a forwarding data base with said derived VLAN value to determine a destination address; and,
> forwarding, in response to said derived VLAN value, said received frame to an output port for transmission to the destination address.

Crayford also does not disclose "*deriving a virtual local area network (derived VLAN) value in response to said one or more indicia of frame type and said port index value.*" In the claimed embodiment, the Applicant uses a combination of a *frame type* and a *port index value* associated with a port to derive a derived VLAN value. As discussed above, Crayford determines his 5-bit VLAN index independent of frame type. Accordingly, Crayford can not possibly disclose deriving a derived VLAN value based on a combination of frame type and port index value. Accordingly, the rejection should be reversed.

D. Rejection under 35 U.S.C. §103(a) over Crayford in view of Shani

1. Claims 4, 39 and 41

Independent claim 39, representative of claims 4, 39 and 41 recites (with emphasis added):

39. A method comprising:
receiving a frame at a input port, the frame including a protocol type and a source address;
in response to the protocol type indicating a particular protocol type, ***parsing the source address to obtain a subnet value***;
applying the subnet value to a memory structure to map the subnet value to a derived VLAN value, the derived VLAN value to differ form at least one other derived VLAN value for another frame received on the input port, but having a different subnet value;
accessing a forwarding database with the derived VLAN value to determine a destination address; and,
forwarding the frame to an output port for transmission to the destination address.

The combination of Crayford and Shani fails to teach or suggest all the limitations of representative claim 39. In particular, neither reference teaches or suggests "*parsing the source address to obtain a subnet value*" and "*applying the subnet value to a memory structure to map the subnet value to a derived VLAN value.*" As discussed above, Crayford determines his 5-bit VLAN index values based on a 2-byte VLAN ID value for tagged frames (see Crayford col. 8, lines 38-40, col. 9, lines 60-62, Fig. 19, and col. 18, line 66 to col. 19, line 4) or based on Source Address (SA), receive (RX) port number, and Destination Address (DA) for untagged frames (see col. 8, lines 52-62 see col. 10, lines 14-18). Subnet values are not used.

In the Advisory Action of Sept. 17, 2007, the Examiner alleges the claimed *subnet value* is shown by Crayford's VLAN value (ID). The Applicant respectfully urges that one skilled in the art would readily discern that a subnet value is quite distinct form a VLAN value (ID). Both terms have clearly different established meanings in the art. Further, the Applicant makes clear in the claims that a subnet value is parsed from a source address. Crayford's VLAN ID is not part of a source address but maintained in a its own separate field. *See* Fig. 7B.

Further, in the Final Office Action of June 12, 2007 at page 13 the Examiner stated "Crayford does not expressly disclose…applying a subnet value to a memory structure to map the subnet value to derived VLAN value" and turned to Shani. However, combination with Shani does not remedy the deficiencies of Crayford. Shani simply discloses a table that "uses the port number as a unique key and correlates multiple VLAN and network/subnet numbers." See Shani col. 9, lines 49-51. Rather than suggest applying a subnet value to a memory structure to map the subnet value to a derived VLAN value, Shani discusses applying a port number to a table to yield a VLAN and a network/subnet number. Clearly, Shani deals with a very different type of mapping than what is claimed.

Accordingly, as neither reference teaches of suggest what the Applicant has claimed, the rejection should be reversed.

2. Claims 8, 25, 27, 29, 31, 35, 38, and 42

Claims 8, 25, 27, 29, 31, 35, 38, and 42 are dependent claims that depends from independent claims believed to be allowable for the reasons discussed above. Accordingly, these claims are believed to be allowable at least due to such dependency.

VIII. CONCLUSION

The Applicant respectfully submits that the claims are allowable over the art of record. Accordingly, the Applicant requests that the rejection of all claims be reversed.

Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

Respectfully submitted,

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VIV. CLAIMS APPENDIX

1. A method of operating a switch for frames in a computer network, comprising:

receiving a frame (received frame) at a port of said switch, said received frame containing one or more indicia of frame type, said one or more indicia of frame type including an indicia of a protocol type;

accessing a virtual local area network (VLAN) value associated with the port;

deriving a virtual local area network (derived VLAN) value in response to said one or more indicia of frame type and said VLAN value, said derived VLAN value for use internal to said switch;

accessing a forwarding database with said derived VLAN value to determine a destination address; and,

forwarding, in response to said derived VLAN value, said received frame to an output port for transmission to the destination address.

4. The method of claim 1 wherein said indicia of frame type further comprises:

a subnet value.

8. The method of claim 1 further comprising:

deriving a MAC address from said derived VLAN value and forwarding said received frame to the output port for transmission to a destination having said MAC address.

9. An apparatus to forward frames in a computer network, comprising:

a port to receive a frame (received frame), said port associated with a virtual local area network (VLAN) value, said received frame containing one or more indicia of frame type, said one or more indicia of frame type including an indicia of a protocol type;

a parsing engine to derive a virtual local area network (derived VLAN) value in response to said one or more indicia of frame type and said VLAN value, said derived VLAN value for use internal to said switch;

a forwarding database configured to use said derived VLAN value as an input and to yield a destination address as an output; and,

an output port to transmit said received frame, in response to said derived VLAN value, to said destination address

10. The apparatus as in claim 9 further comprising:

a forwarding engine for forwarding said received frame in response to said derived VLAN value and said destination address.

11. A computer readable media containing instructions for the practice of operating a switch for frames in a computer network, comprising:

receiving a frame (received frame) at a port of said switch, said received frame containing one or more indicia of frame type , said one or more indicia of frame type including an indicia of a protocol type;

accessing a virtual local area network (VLAN) value associated with the port;

deriving a virtual local area network (derived VLAN) value in response to said one or more indicia of frame type and said VLAN value, said derived VLAN value for use internal to said switch;

accessing a forwarding database with said derived VLAN value to determine a destination address; and,

forwarding, in response to said derived VLAN value, said received frame to an output port for transmission to the destination address.

13. A method of operating a switch for frames in a computer network, comprising:

using one or more indicia of frame type found in a received frame to derive a virtual local area network (derived VLAN) value, said derived VLAN value used internal to said switch, said derived VLAN value different from a VLAN value associated the frame external to the switch; and

using the derived VLAN value in making forwarding decisions.

14. The method of claim 13 further comprising:

controlling broadcast domains in the computer network by forwarding in response to the derived VLAN value.

15. The method of claim 13 further comprising:

using an indicia of a receiving port in constructing the derived VLAN value.

16. A computer readable media containing instructions for the practice of operating a switch for frames in a computer network, comprising:

using one or more indicia of frame type found in the received frame to derive a virtual local area network (derived VLAN) value, said derived VLAN used internal to said switch, said derived VLAN value different from a VLAN value associated the frame external to the switch; and

using the derived VLAN value in making forwarding decisions.

18. A method of operating a switch for frames in a computer network, comprising:

receiving a frame (received frame) at a port of said switch, said received frame containing one or more indicia of frame type, said one or more indicia of frame type including an indicia of a protocol type;

accessing a port index value associated with the port;

deriving a virtual local area network (derived VLAN) value in response to said one or more indicia of frame type and said port index value;

accessing a forwarding data base with said derived VLAN value to determine a destination address; and,

forwarding, in response to said derived VLAN value, said received frame to an output port for transmission to the destination address.

19. An apparatus to forward frames in a computer network, comprising:

a port to receive a frame (received frame), said port associated with a index value, said received frame containing one or more indicia of frame type, said one or more indicia of frame type including an indicia of a protocol type;

a parsing engine to derive a virtual local area network (derived VLAN) value in response to said one or more indicia of frame type and said index value;

a forwarding database configured to use said derived VLAN value as input and to yield a destination address as output; and,

an output port to transmit said received frame, in response to said derived VLAN value, to said destination address.

20. An apparatus to forward frames in a computer network, comprising:

means for receiving a frame (received frame), said received frame containing one or more indicia of frame type, said one or more indicia of frame type including an indicia of a protocol type;

means for accessing a index value associated with the means for receiving a frame;

means for deriving a virtual local area network (derived VLAN) value in response to said one or more indicia of frame type and said index value;

means for accessing a forwarding database with said derived VLAN value to determine a destination address; and,

means for forwarding, in response to said derived VLAN value, said received frame to an output port for transmission to the destination.

24. The method of claim 1 wherein the step of deriving further comprises:

generating a protocol code from the indicia of protocol type;

combining the protocol code with the VLAN value to produce a mapping address; and

accessing a memory structure with the mapping address to obtain the derived VLAN value.

25. The method of claim 1 wherein the indicia of protocol type indicates an Internet Protocol (IP) protocol type.

26. The apparatus as in claim 9 further comprising:

a protocol mapping table to map the indicia of protocol type to a protocol code; and

wherein the parsing engine is configured to combine the protocol code with the VLAN value to produce a mapping address and to access a memory structure with the mapping address to obtain the derived VLAN.

27. The apparatus as in claim 9 wherein the indicia of protocol type indicates an Internet Protocol (IP) protocol type.

28. The method of claim 18 wherein the step of deriving further comprises:

generating a protocol code from the indicia of protocol type;

combining the protocol code with the index value to produce a mapping address; and

accessing a memory structure with the mapping address to obtain the derived VLAN.

29. The method of claim 18 wherein the indicia of protocol type indicates an Internet Protocol (IP) protocol type.

30. The apparatus as in claim 19 further comprising:

a protocol mapping table to map the indicia of protocol type to a protocol code; and

wherein the parsing engine is configured to combine the protocol code with the index value to produce a mapping address and to access a memory structure with the mapping address to obtain the derived VLAN.

31. The apparatus as in claim 19 wherein the indicia of protocol type indicates an Internet Protocol (IP) protocol type.

32. A method comprising:

receiving a frame at a input port, the frame including a protocol type;

accessing a virtual local area network (VLAN) value associated with the input port;

associating the frame with a protocol code based on the frame's protocol type;

concatenating the protocol code together with the VLAN value to produce a mapping address;

applying the mapping address to a memory structure to obtain a derived VLAN value that is based upon both the frame's protocol type and the VLAN value associated with the input port, the derived VLAN value to differ form at least one other derived

VLAN value for another frame received on the input port, but having a different protocol type;

accessing a forwarding database with the derived VLAN value to determine a destination address; and

forwarding the frame to an output port for transmission to the destination address.

33. The method of claim 32 wherein the step of associating further comprises:

mapping the protocol type to a protocol code using a protocol mapping table.

34. The method of claim 32 wherein the frame includes the protocol type in a protocol type field.

35. The method of claim 32 wherein the protocol type indicates Internet Packet Exchange (IPX) protocol.

36. An apparatus comprising:

an input port to receive a frame, the frame including a protocol type, the input port associated with a virtual local area network (VLAN) value;

a protocol mapping table to map the frame's protocol type to a protocol code;

an engine to concatenate the protocol code together with the VLAN value to produce a mapping address, and to apply the mapping address to a memory structure to obtain a derived VLAN value that is based upon both the frame's protocol type and VLAN value associated with the input port, the derived VLAN value to differ form at least one other derived VLAN value for another frame received on the input port, but having a different protocol type;

a forwarding database to use the derived VLAN value to determine a destination address; and

an output port to transmit the frame to the destination address.

37. The apparatus of claim 36 wherein the frame includes the protocol type in a protocol type field.

38. The apparatus of claim 36 wherein the protocol type indicates Internet Packet Exchange (IPX) protocol.

39. A method comprising:

receiving a frame at a input port, the frame including a protocol type and a source address;

in response to the protocol type indicating a particular protocol type, parsing the source address to obtain a subnet value;

applying the subnet value to a memory structure to map the subnet value to a derived VLAN value, the derived VLAN value to differ form at least one other derived VLAN value for another frame received on the input port, but having a different subnet value;

accessing a forwarding database with the derived VLAN value to determine a destination address; and,

forwarding the frame to an output port for transmission to the destination address.

40. The method of claim 39, wherein the particular protocol type is Internet Protocol (IP).

41. An apparatus comprising:

an input port to receive a frame, the frame including a protocol type and a source address;

an engine to, in response to the protocol type indicating a particular protocol type, parse the source address to obtain a subnet value, and to apply the subnet value to a memory structure to map the subnet value to a derived VLAN value, the derived VLAN value to differ form at least one other derived VLAN value for another frame received on the input port, but having a different subnet value;

a forwarding database to use the derived VLAN value to determine a destination address; and

an output port to transmit the frame to the destination address.

42. The apparatus of claim 41, wherein the particular protocol type is Internet Protocol (IP).

VV. EVIDENCE APPENDIX

None.

VVI. RELATED PROCEEDINGS APPENDIX

None.